

SECTION 16670: LIGHTNING PROTECTION SYSTEM

PART I. GENERAL

1.01 Objective: To provide safety for the building and occupants by preventing damage to building structure caused by lightning.

1.02 Standards: The following specifications and standards of the latest issue form a part of this specification:

- (1) Lightning Protection Institute Installation Standard, LPI 175
- (2) National Fire Protection Association Lightning Protection Standard, NFPA 780
- (3) Underwriters Laboratories, Inc. Installation Requirements, UL96A

1.03 System Design: The work covered by this section of the specifications consists of furnishing all labor, materials, and items of service required for the completion of a functional and unobtrusive lightning protection system as approved by the architect, engineer, and in strict accordance with this section of the specifications and the applicable contract drawings.

If any departure from the contract drawings or submittal drawings covered below are deemed necessary by the Contractor, details of such departures and reasons therefore shall be submitted as soon as practical to the architect/engineer for approval.

1.04 Submittals: Complete design drawings showing the type, size, and locations of all grounding down conductors, through roof/through wall assemblies, roof conductors, and air terminals shall be submitted to the architect and engineer for approval.

1.05 Quality Assurance: The lightning protection system shall conform to the requirements and standards for lightning protection systems of the LPI, UL, and NFPA. Upon completion, a certification letter and warranty by the installation company, i.e: Bonded Lightning Protection Systems, Ltd., shall be delivered to the owner. The certification letter and warranty ensures the system has been installed by a company who employs LPI certified Master Designers and Installers and the building structure is protected by a lightning protection system meeting current standards.

PART II. PRODUCTS

2.01 Standard: The system to be furnished under this specification shall be the standard product of manufacturers regularly engaged in the production of lightning protection equipment and shall be the manufacturer's latest approved design. The equipment shall be UL listed and properly UL labeled.

All equipment shall be new and of a design and construction to suit the application where it is used in accordance with accepted industry standards and LPI, UL, and NFPA standard requirements.

QUALIFIED MANUFACTURERS:

- (1) Advanced Lightning Technology
- (2) East Coast Lightning Equipment

2.02 Lightning Protection Equipment: All materials shall be copper and bronze and of the size, weight, and construction to suit the application and used in accordance with LPI, UL, and NFPA code requirements. Class I sized components may be utilized on roof levels 75 feet and below in height. Class II sized components are required for roof levels over 75 feet in height. Bolt type connectors and splicers shall be utilized on Class I and Class II structures. Pressure squeeze clamps are not acceptable. All mounting hardware shall be stainless steel to prevent corrosion.

2.03 Aluminum Components: Aluminum materials may not be used except on roofs that utilize aluminum, galvalume or galvanized metal roofing components. On aluminum, galvalume or galvanized metal roofs or where aluminum, galvalume or galvanized metal parapet caps exist, the entire roof lightning protection equipment shall utilize aluminum components to insure compatibility. However, the down leads and grounding are to utilize copper with the bimetal transition occurring at the through roof assembly with an approved bimetal through roof assembly.

2.04 Surge Protection Devices: A surge protection device at the main electrical service entrance is required by Underwriters Laboratories UL96A lightning protection standards. The surge protection device must comply with UL Standard 1449 as a Type 1 or Type 2 lightning rated unit of 20kA or more. It shall be the responsibility of the Electrical Contractor to install or verify that a surge protection device is installed on the main electrical service.

PART III. EXECUTION

3.01.1 Installation: The installation shall be accomplished by an experienced installation company that is a member of the Lightning Protection Institute (LPI) and an employer of LPI Certified Master Installers of lightning protection systems and UL Listed. For example: Bonded Lightning Protection Systems, Ltd. – 1-800-950-7933 with locations in Dallas, Fort Worth, Houston, Austin, San Antonio, Oklahoma, Louisiana, Alabama. A Certified Journeyman or Master Installer shall supervise the work. All equipment shall be installed in a neat, workmanlike manner. The system shall consist of a complete conductor network at the roof and include air terminals, connectors, splicers, bonds, copper down leads, and proper ground terminals. Copper down lead conductors shall be utilized even when aluminum is required on the roof. Down lead conductors in conduit shall not be brought directly through the roof. Through roof assemblies with solid brass or stainless steel rods shall be utilized for this purpose. Structural steel may be utilized in the installation as outlined by UL, NFPA, and LPI standards.

3.02 Coordination: The lightning protection installer will work with other trades to insure a correct, neat and unobtrusive installation. The roofing contractor will be responsible for sealing and flashing all lightning protection roof penetrations as per the roof manufacturer's recommendations. However, the lightning protection contractor will be required to coordinate locations of through roofs and submit details of through roof penetrations as required. The lightning protection contractor shall use a compatible adhesive to adhere lightning protection components to the roof when required. The lightning protection contractor shall furnish and install the adhesive and obtain an approval of the compatible adhesive from the roof manufacturer/contractor prior to the installation. Should the roofing contractor/manufacturer require any special walk pads, membrane patches, pavers, etc. under the components of the lightning protection system, it shall be the responsibility of the roofing contractor to furnish and install such items. The lightning protection installer shall be responsible for marking the roof with all conductor and/or pad locations.

It shall be the responsibility of the lightning protection installer to assure a sound bond to the main water service and to assure interconnection with other ground systems.

3.03 Completion: Upon completion of the installation, the lightning protection installer shall conform to the requirements and standards for lightning protection systems of the LPI, UL, and NFPA. Upon completion, a certification letter and warranty by the installation company, i.e: Bonded Lightning Protection Systems, Ltd., shall be delivered to the owner.

NOTE: FOR PROJECT CLARIFICATION, USE ONE PARAGRAPH OF PART IV IF PROJECT CONNECTS TO AN EXISTING STRUCTURE.

PART IV. CLARIFICATION

4.01 Clarification: This specification recognizes additions that are attached to a structure which does not fully comply with current lightning protection standards. Therefore, all attached structures shall be reviewed for compliance. The attached structure(s) not fully complying because of damaged systems, missing systems or improperly installed systems shall be fully protected and/or repaired in order to obtain all completion certifications and warranties for the owner.

4.02 Clarification: This specification recognizes additions that are attached to a structure may not fully comply with current lightning protection standards. Therefore, lightning protection shall be provided for new buildings only. Upon completion of the installation, the installer shall furnish a completion certificate and warranty for the new addition only. In addition, a written report of findings and change request will be given on attached structure(s) in order for the facility to comply with current lightning protection standards. If no work is necessary, the completion certifications and warranties shall be provided for the entire structure.

NOTE: SPECIFYING PERSONNEL SHOULD USE ONLY ONE PARAGRAPH 4.01 IN ORDER TO CLARIFY PROJECT REQUIREMENTS AT BID TIME. IF, THE PROJECT IS NOT ATTACHED TO EXISTING STRUCTURE(S), DELETE PART IV.

NOTE: LIGHTNING PROTECTION PENETRATIONS AND/OR ATTACHMENT PROCEDURES SHOULD BE ADDRESSED IN THE ROOFING SECTION OF THE SPECIFICATIONS.

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